

WHAT IS CLAIMED IS:

1. A method for generating an optical model,  
comprising:

5 adjusting a lens aberration of one or more lens  
aberrations of an initial lens;

determining a wafer response to the adjustment;

generating lens aberration data according to the  
wafer response;

10 selecting one or more aberration functions of a  
plurality of aberration functions;

fitting the one or more aberration functions to the  
lens aberration data; and

15 generating an optical model in accordance to the one  
or more aberration functions, the optical model  
indicating the wafer response to the one or more lens  
aberrations of the initial lens.

20 2. The method of Claim 1, wherein the plurality of  
aberration functions comprise a plurality of Zernike  
functions.

3. The method of Claim 1, further comprising:

receiving a plurality of aberration content sets  
associated with a plurality of exposure tools, each  
aberration content set describing one or more lens  
5 aberrations associated with a lens of an exposure tool of  
the one or more exposure tools;

receiving a pattern design comprising one or more  
locations;

10 applying the optical model to the pattern design  
according to each aberration content set to generate  
response data for each aberration content set; and

determining a sensitivity of the one or more  
locations of the pattern design to the one or more lens  
aberrations associated with the plurality of exposure  
15 tools in accordance with the response data.

4. The method of Claim 1, further comprising:

receiving aberration content describing one or more  
lens aberrations associated with a lens;

20 applying the optical model to a pattern design  
according to the aberration content to identify an error;  
and

performing a proximity correction for the error.

5. The method of Claim 1, further comprising:

performing an estimated proximity correction for a  
pattern design;

5 receiving aberration content describing one or more  
lens aberrations associated with a lens of an exposure  
tool;

applying the optical model to the pattern design  
according to the aberration content to identify an error;

10 performing a proximity correction for the error if  
the error is correctable; and

identifying the error as uncorrectable otherwise.

6. A system for generating an optical model, comprising:

a database operable to store lens aberration data associated with a wafer response to one or more lens aberrations of an initial lens; and

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a server coupled to the database and operable to:

adjust a lens aberration of the one or more lens aberrations;

determine the wafer response to the adjustment;

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generate the lens aberration data according to the wafer response;

select one or more aberration functions of a plurality of aberration functions;

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fit the one or more aberration functions to the lens aberration data; and

generate an optical model in accordance to the one or more aberration functions, the optical model indicating the wafer response to the one or more lens aberrations of the initial lens.

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7. The system of Claim 6, wherein the plurality of aberration functions comprise a plurality of Zernike functions.

8. The system of Claim 6, wherein:

the database is further operable to:

receive a plurality of aberration content sets  
associated with a plurality of exposure tools, each  
5 aberration content set describing one or more lens  
aberrations associated with a lens of an exposure tool of  
the one or more exposure tools;

receive a pattern design comprising one or more  
locations; and

10 the server is further operable to:

apply the optical model to the pattern design  
according to each aberration content set to generate  
response data for each aberration content set; and

determine a sensitivity of the one or more  
15 locations of the pattern design to the one or more lens  
aberrations associated with the plurality of exposure  
tools in accordance with the response data.

9. The system of Claim 6, wherein:

20 the database is further operable to receive  
aberration content describing one or more lens  
aberrations associated with a lens; and

the server is further operable to:

apply the optical model to a pattern design  
25 according to the aberration content to identify an error;  
and

perform a proximity correction for the error.

10. The system of Claim 6, wherein:

the database is further operable to receive  
aberration content describing one or more lens  
aberrations associated with a lens of an exposure tool;

5 and

the server is further operable to:

perform an estimated proximity correction for a  
pattern design;

10 apply the optical model to the pattern design  
according to the aberration content to identify an error;

perform a proximity correction for the error if  
the error is correctable; and

identify the error as uncorrectable otherwise.

11. Logic for generating an optical model, the logic embodied in a medium and operable to:

adjust a lens aberration of one or more lens aberrations of an initial lens;

5 determine a wafer response to the adjustment;

generate lens aberration data according to the wafer response;

select one or more aberration functions of a plurality of aberration functions;

10 fit the one or more aberration functions to the lens aberration data; and

generate an optical model in accordance to the one or more aberration functions, the optical model indicating the wafer response to the one or more lens aberrations of the initial lens.

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12. The logic of Claim 11, wherein the plurality of aberration functions comprise a plurality of Zernike functions.

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13. The logic of Claim 11, further operable to:

receive a plurality of aberration content sets  
associated with a plurality of exposure tools, each  
aberration content set describing one or more lens  
5 aberrations associated with a lens of an exposure tool of  
the one or more exposure tools;

receive a pattern design comprising one or more  
locations;

10 apply the optical model to the pattern design  
according to each aberration content set to generate  
response data for each aberration content set; and

determine a sensitivity of the one or more locations  
of the pattern design to the one or more lens aberrations  
associated with the plurality of exposure tools in  
15 accordance with the response data.

14. The logic of Claim 11, further operable to:

receive aberration content describing one or more  
lens aberrations associated with a lens;

20 apply the optical model to a pattern design  
according to the aberration content to identify an error;  
and

perform a proximity correction for the error.



15. The logic of Claim 11, further operable to:  
perform an estimated proximity correction for a  
pattern design;

5 receive aberration content describing one or more  
lens aberrations associated with a lens of an exposure  
tool;

apply the optical model to the pattern design  
according to the aberration content to identify an error;

10 perform a proximity correction for the error if the  
error is correctable; and

identifying the error as uncorrectable otherwise.

16. A system for generating an optical model, comprising:

means for adjusting a lens aberration of one or more lens aberrations of an initial lens;

5 means for determining a wafer response to the adjustment;

means for generating lens aberration data according to the wafer response;

10 means for selecting one or more aberration functions of a plurality of aberration functions;

means for fitting the one or more aberration functions to the lens aberration data; and

15 means for generating an optical model in accordance to the one or more aberration functions, the optical model indicating the wafer response to the one or more lens aberrations of the initial lens.

17. A method for generating an optical model, comprising:

adjusting a lens aberration of one or more lens aberrations of an initial lens;

5 determining a wafer response to the adjustment;

generating a lens aberration data according to the wafer response;

10 receiving the lens aberration data associated with the wafer response to the one or more lens aberrations of the initial lens;

selecting one or more aberration functions of a plurality of aberration functions, the plurality of aberration functions comprising a plurality of Zernike functions;

15 fitting the one or more aberration functions to the lens aberration data;

generating an optical model in accordance to the one or more aberration functions, the optical model indicating the wafer response to the one or more lens aberrations of the initial lens;

20 receiving a plurality of aberration content sets associated with a plurality of exposure tools, each aberration content set describing one or more lens aberrations associated with a lens of an exposure tool of the one or more exposure tools;

25 receiving a first pattern design comprising one or more locations;

applying the optical model to the first pattern design according to each aberration content set to generate response data for each aberration content set;

30 and

determining a sensitivity of the one or more locations of the first pattern design to the one or more lens aberrations associated with the plurality of exposure tools in accordance with the response data;

5 performing an estimated proximity correction for a second pattern design;

receiving aberration content describing one or more lens aberrations associated with a lens of an exposure tool;

10 applying the optical model to the second pattern design according to the aberration content to identify an error;

performing a proximity correction for the error if the error is correctable; and

15 identifying the error as uncorrectable otherwise.